UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

DR. PETER RENTROP,	:	
Plaintiff,	:	04 Civ. 0101 (PKC)
-against-	:	
THE SPECTRANETICS CORPORATION,	:	FINDINGS OF FACT AND CONCLUSIONS OF LAW
Defendant.	:	

P. KEVIN CASTEL, U.S.D.J.

These are the Court's findings of fact and conclusions of law on the equitable defenses of inequitable conduct and implied-in-law license asserted by the Spectranetics Corporation ("Spectranetics") against Peter Rentrop, M.D., in an action commenced by Dr. Rentrop for infringement of U.S. Patent No. 6,673,064 (the "'064 Patent"). This Court heard the witnesses and observed their demeanor. I found Dr. Rentrop's testimony to be credible in all material respects, and, based upon its verdict, the jury did as well. For the reasons explained more fully herein, the Court concludes that Spectranetics has failed to establish either defense.

By way of background, the '064 Patent claims an invention of a type of excimer laser catheter for use in human angioplasty. Excimer Laser catheters use laser energy to ablate occlusions (blood clots) in the vascular system. The claimed invention has a tip diameter of less than one millimeter and a tip length of at least one centimeter. The catheter tip is flexible to enable it to negotiate arterial bends in coronary arteries, and the catheter shaft is stiff so that the catheter can be effectively pushed through the vascular system to reach a desired site.

Dr. Rentrop conveyed his idea for such a catheter to Spectranetics in 1998, which was the only corporation approved by the United States Food and Drug Administration ("FDA") to sell excimer laser catheters for use in human angioplasty. At the time, Spectranetics sold excimer laser catheters with tip diameters in the 1.4 mm to 2.0 mm range. Spectranetics decided to pursue Dr. Rentrop's idea, and Spectranetics' development personnel worked at Dr. Rentrop's instruction to produce a prototype. A suitable prototype was developed for clinical testing, but Dr. Rentrop did not participate in the human clinical trials because his relationship with Spectranetics had broken down due to an inability to reach a financial agreement. Dr. Rentrop filed an application for a patent on the invention. The '064 Patent, which issued on January 6, 2004, featured the following claims, among others:

1. An excimer laser catheter, comprising:

> a catheter shaft containing optical fibers in a concentric arrangement, a tip extending from the catheter shaft and having a diameter that is smaller than that of the catheter shaft, the tip having a length of at least 1 cm and a diameter less than 1 millimeter, each of the optical fibers extending through a full length of the tip and a full length of the catheter shaft, the catheter shaft being configured to be stiffer and less flexible than the tip so as to be pushable to push the tip into a desired site even though the tip negotiates arterial bends to reach the desired site.

2. A catheter as in claim 1, wherein the catheter shaft is configured and arranged to deliver laser energy at an energy level that is in excess of a fluence of 60mJ/mm^2 at 40 Hertz.

3. A catheter as in claim 1, wherein the optical fibers are arranged in at least two rows, spaced radially from each other and concentric with each other.

…

7. A catheter as in claim 1, further comprising at least one coupler from which extends the catheter shaft, an entirety of the tip being spaced away from the coupler.

(PX 1.) Spectranetics eventually obtained FDA approval for excimer laser catheters with tip diameters of approximately .9 mm and marketed and sold the products. Dr. Rentrop sued for infringement and asserted that the infringement was willful.

As indicated, Spectranetics asserted the equitable defenses of inequitable conduct and implied-in-law license. Spectranetics also defended on the grounds that the claims in the '064 Patent were invalid based on theories of anticipation, obviousness and inventorship by others. Spectranetics counterclaimed to correct the inventorship of both the '064 Patent and another of Dr. Rentrop's patents, U.S. Patent No. 6,440,125 (the "'125 Patent"), and asserted state-law counterclaims for conversion, misappropriation of trade secrets and breach of a confidentiality agreement.

A jury was empanelled on November 27, 2006. By stipulation, only claims 1, 2, 3 and 7 were presented to the jury for decision on infringement and validity.[1] On December 8, 2006, the jury returned its verdict that Spectranetics infringed claim 1 of the '064 Patent, but that the infringement was not willful. The jury found that claims 2, 3 and 7 were not infringed. The jury concluded that the patent claims were valid and that Dr. Rentrop was the sole inventor of the '064 and '125 Patents. The jury rejected all of Spectranetics' state-law counterclaims.

At trial, the parties presented evidence on the equitable defenses, although neither defense was submitted to the jury. I declined to submit those issues to the jury on an advisory basis, although I recognized the Court's power to do so. Three witnesses testified for plaintiff at trial, including Dr. Rentrop. Spectranetics produced six witnesses, including four current or former Spectranetics employees.

[1] The parties further stipulated that the decisions on infringement and validity of (a) claim 1 also applied to claims 8, 15, 16 and 17; (b) claim 2 applied to claims 9 and 18; (c) claim 3 applied to claims 4, 10, 11, 19 and 20; and (d) claim 7 applied to claims 14 and 23. (Trial Tr. 145.)

Having heard the witnesses and considered the documentary evidence, I conclude that Spectranetics has failed to meet its burden to show inequitable conduct by plaintiff or an implied-in-law license to use the invention claimed in the '064 Patent. While Dr. Rentrop did not disclose all material information to the patent examiner while prosecuting the '064 Patent, he did not intend to deceive the USPTO by these omissions under circumstances sufficient to support a conclusion of inequitable conduct. Spectranetics has also failed to show that it owns an implied-in-law license known as a "shop right" to use the invention claimed in the '064 Patent. The jury's finding of infringement therefore stands.

FINDINGS OF FACT

1. Dr. Rentrop is a New York-licensed and world renowned cardiovascular interventionalist whose professional career has spanned over 30 years. His practice, known as Gramercy Cardiac Diagnostic Services, P.C., has its principal location at 38 East 22nd Street, New York, NY 10010. He is currently chief of cardiovascular research at St. Vincent's Hospital and Medical Center in New York City and an attending physician at St. John's Hospital.

2. Spectranetics is a Delaware corporation with its principal place of business in Colorado Springs, Colorado. Spectranetics' Colorado Springs offices are its only offices in the United States.

3. Spectranetics is engaged in the business of designing, marketing and selling products for use in angioplasty, including excimer laser catheters. Spectranetics is the only corporation with approval from the FDA to sell excimer laser catheters for use in human angioplasty in the United States. To develop its products, Spectranetics invests a substantial portion of its revenue in research and development ("R&D"). Between 1990 and 1999, the company invested $40 million – approximately 33% of its revenue – in R&D. Mr. Guy Childs,

vice president and chief financial officer for Spectranetics, testified that prior to 1990, the majority of Spectranetics' R&D funds were invested in creating the laser technology for the excimer laser system. Subsequently, the majority of Spectranetics' R&D efforts have been invested in developing fiber-optic wires and catheters that utilize that technology.

4. Dr. Rentrop attended medical school in Germany at the Universities of Freiberg, Munster and Heidelberg. He then came to the United States where he served as an intern and then resident at Wayne State University Receiving Hospital in Detroit, Michigan. He completed a second residency in Cleveland, Ohio at the Cleveland Clinic where he principally studied cardiology and learned the skill of coronary angiography. He subsequently returned to Germany where he established a cardiac catheterization laboratory at an affiliate of the University of Freiberg Hospital.

5. While practicing in Germany in 1978, Dr. Rentrop developed a pioneering study in the area of interventional cardiology which involved the use of guidewires and catheters to treat total occlusions in coronary arteries. The procedure consisted of inserting a guidewire through an occlusion, which created an opening, and then inserting a catheter over the guidewire to push the clot against the arterial wall to enlarge the opening, which improved or restored blood flow. This "perforation" procedure proved to be an effective means of preventing heart attacks.

6. In 1979, Dr. Rentrop's team in Germany developed a second method for treating occlusions in coronary arteries. This study used catheters to deliver "clot-busting" chemicals to occlusions in order to dissolve the clots chemically. This "infusion" procedure also proved effective in preventing heart attacks.

7. Around the time when Dr. Rentrop was conducting these studies, he designed catheters to use in these procedures. One such catheter was developed and manufactured in or around 1982 by a corporation called USCI; that catheter was an infusion catheter for delivering clot-busting chemicals, and was sold commercially as the "Rentrop Infusion Catheter." USCI paid Dr. Rentrop a 3% royalty for sales of the Rentrop Infusion Catheter. This catheter was not patented in the United States or elsewhere. Dr. Rentrop testified that he had no need to go through the expense of patenting the invention because he was receiving a royalty on sales.

8. Prior to filing the patent applications at issue in this case, Dr. Rentrop filed one other patent application in the course of his career. That application was filed in Germany, and claimed an invention that was similar in design to the Rentrop Infusion Catheter, except that the claimed invention was a perforation catheter for use with a guidewire. Both the Rentrop Infusion Catheter and the claimed perforation catheter featured a tip segment that was more flexible than the shaft in order to negotiate arterial bends. The catheters were designed to gradually taper from the shaft to the tip so that the tip was smaller in diameter than the shaft.

9. In 1980, the Chairman of Medicine at Mt. Sinai Hospital in New York City invited Dr. Rentrop to establish an interventional program at Mt. Sinai Hospital and to serve as a professor at the affiliated medical school. Dr. Rentrop accepted the invitation, and continued at Mt. Sinai until 1986, at which time he moved his practice to St. Vincent's Hospital, also in New York City, and served as a professor at the affiliated New York Medical College.

10. From 1991 to 1996, Dr. Rentrop was the director of a symposium sponsored by the American College of Cardiology in New York dedicated to methods of intervention in the treatment of heart disease. Lecturers selected by Dr. Rentrop, including Dr. Rentrop himself, gave presentations regarding angioplasty and related issues.

11. Dr. Rentrop became involved with Spectranetics through these symposia. Spectranetics was a corporate sponsor, provided a grant for a speaker on excimer laser technology and operated a booth to exhibit its products. In 1996, Dr. Rentrop gave a presentation entitled "Excimer Laser coronary angioplasty: Eccentric Catheter with ICUS guidance." (PX 11.)

12. When Dr. Rentrop began running the symposium, Spectranetics had not yet obtained FDA approval to market and sell excimer laser catheters. When the excimer laser catheters became clinically available, Dr. Rentrop was trained by Spectranetics to use their products, and Dr. Rentrop brought the technology to his practice at St. Vincent's. Beginning in 1995, he routinely used the technology for treating patients.

13. At that time, Spectranetics sold catheters with tip diameters of 1.4 mm, 1.7 mm and 2.0 mm. These catheters, known as the Extreme catheter line, featured a step down in diameter (as opposed to a gradual taper) between the shaft and the tip, and the tip was more flexible than the shaft. The Extreme catheters were designed for "debulking." Dr. Rentrop explained debulking as follows:

> Debulking is an attempt to diminish the amount of plaque material in the coronary artery. In order to understand that I have to contrast it with dilatation. Both techniques are aimed at restoring or improving blood flow to coronary arteries. The original approach was dilatation using balloon[s] which stretches the vessel wall and actually tears the offending material, the plaque[,] apart and results in a healing process with scar formation. And in about 40 percent of the patients who had dilatation that scar formation in return resulted in narrowings coming back.
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> … [D]ebulking was an attempt to avoid this problem by not stretching the vessel wall but by actually removing the plaque material from within the vessel . . . .

(Trial Tr. 64.) In or about 1996 or 1997, Dr. Rentrop began to disfavor the use of Spectranetics' Extreme laser catheters in coronary arteries for several reasons. First, Dr. Rentrop found them to

be insufficiently flexible for navigating through coronary arterial bends. Second, Dr. Rentrop found the laser energy level to be inadequate to successfully ablate harder, calcified occlusions. Thirdly, debulking in narrow coronary arteries with lasers with diameters of 1.4 mm to 2 mm increased the likelihood of catastrophic dissections, which risked causing fatal heart attacks and frequently required emergency bypass surgery to counteract. Dr. Rentrop believed, however, that a smaller diameter laser catheter could be developed that would have a useful application in coronary vessels without the heightened risk of catastrophic dissection.

14. It was previously known by physicians who used excimer laser technology that a smaller diameter laser catheter would diminish the risk of dissection in the coronary vessel. In 1994, Dr. Jim Margolis made it known to Spectranetics that he believed that a 1 mm laser catheter would be sufficiently small to reduce the risk of dissections. In May 1994, Spectranetics launched a "1 millimeter project" to design a catheter having a diameter of 1 mm; however, the 1 millimeter project was abandoned by Spectranetics after three months and never reinstituted.

15. Apart from the reduced risk of dissection, Dr. Rentrop believed that a smaller diameter laser catheter would have an especially useful application in treating chronic total occlusions – hard occlusions that could be traversed with a guidewire but were so hard and calcified that no other instruments could get through the occlusion. Instead of using the smaller laser catheter for debulking, Dr. Rentrop believed that a smaller catheter could be used to create a pilot hole over the guidewire through a chronic total occlusion, which would then allow for the possibility of further dilation of the vessel by mechanical means, such as with a stent or balloon. There was no evidence that Dr. Rentrop knew of the 1 millimeter project when he conceived of his invention.

16. In early 1998, Dr. Rentrop communicated his idea for a smaller diameter laser catheter to Mr. Henk Kos, then vice president for international marketing at Spectranetics. (See PX 19; Trial Tr. 87-88.) Mr. Kos approached Mr. Kevin Taylor, then director of engineering at Spectranetics, and told him about Dr. Rentrop's idea. (See Trial Tr. 617.) Spectranetics was interested in developing Dr. Rentrop's concept, and on March 30, 1998, Mr. Taylor sent Dr. Rentrop a memorandum stating that "Henk Kos has informed me of your idea of a small diameter laser catheter to help recanalize tight total occlusions crossable with a guidewire. I wanted to inform you that we are going to pursue the idea and feel the catheter would be a valuable addition to our product line for treating chronic total occlusions." (PX 19.)

17. Mr. Taylor initially generated drawings and then, with the assistance of Mr. Kenneth Harlan, a Spectranetics technician working under Mr. Taylor, created prototypes of the proposed laser catheter and presented them to Dr. Rentrop for his inspection. (See PX 25.) Dr. Rentrop inspected the prototypes of the catheter in a variety of ways, including by using plastic models of the human heart and vascular system provided by Spectranetics. Dr. Rentrop testified that he used these models but that they were not entirely adequate replicas of the heart and vascular system, and so he relied most heavily on his physical examinations of the prototypes and his sense of touch and feel as an experienced cardiovascular interventionalist. These inspections were performed by Dr. Rentrop at facilities that were available to him through his medical practice in New York; Dr. Rentrop did not travel to Colorado or use Spectranetics facilities for his inspections and testing. Among the modifications he directed were that the tip be made longer and more flexible, and that the shaft be made stiffer.

18. By late 1999, after approximately 20 months and over 55 communications between Dr. Rentrop and Mr. Taylor, a prototype of a laser catheter with a tip diameter of .9 mm

(the ".9 laser catheter") was constructed to Dr. Rentrop's satisfaction. The .9 laser catheter had a smaller tip diameter than the Extreme laser catheters, and it also featured a different size ratio in the diameters of the shaft and tip in order to achieve the desired balance between flexibility and pushability of the device.

19. After the final prototype was created, Dr. Rentrop conducted a test of the device in an animal study in Los Angeles, California in early 2000. Spectranetics paid the costs associated with this testing, and paid Dr. Rentrop $2,000 to perform the test. The purpose of the animal trial was that animal testing is a prerequisite to obtaining FDA approval for clinical studies on human patients. The animal study was a success, and a patient study was organized by Spectranetics. However, Dr. Rentrop did not participate in the patient study because by that time differences between Dr. Rentrop and Spectranetics emerged regarding the financial recognition of his work, and the collaboration between Dr. Rentrop and Spectranetics' development personnel ceased.

20. The human clinical trials were performed in Canada by J. David Hilton, M.D. In a letter dated June 11, 1999 from Dr. Hilton to Canadian health officials regarding the proposed clinical trials, Dr. Hilton wrote that "[t]he Extreme 0.9mm tip diameter concentric catheter has been developed by Dr. Peter Rentrop to give a low profile high density fibre pack for small vessels, tough occlusions and heavily calcified arteries . . . ." (PX 99.) The letter purported to be on behalf of Dr. Hilton and Spectranetics, and was copied to Mr. Taylor and Mr. Dan Bossie, another Spectranetics employee. Mr. Taylor testified that the reference to Dr. Rentrop as having developed the catheter was a misstatement by Dr. Hilton. I do not credit Mr. Taylor's testimony in this regard. Mr. Taylor frequently strained his testimony to either minimize Dr. Rentrop's role

in developing the .9 laser catheter, to aggrandize his own and to overemphasize the significance of prior art.

21. Following the clinical trial, Spectranetics obtained FDA approval of the .9 laser catheter. From this model, Spectranetics developed the 0.9 Extreme Laser Catheters, 0.9 Vitesse Laser Catheters, X-80 Extreme Laser Catheters and the X-80 Vitesse Laser Catheters (hereinafter collectively referred to as "the accused products"). They have all been approved by the FDA to be marketed and sold for use in human angioplasty. The testimony at trial was that sales from these products have exceeded $10 million for Spectranetics.

22. Early in his dealings with Mr. Taylor, Dr. Rentrop had expressed his desire to formalize his relationship with Spectranetics. Dr. Rentrop informed Mr. Taylor that he wanted a financial agreement to compensate him for his ideas and work. Mr. Taylor corroborated that the first time he spoke with Dr. Rentrop, Dr. Rentrop asked him whether a royalty would be available to him. Mr. Taylor told Dr. Rentrop that he did not think a royalty was likely because he did not believe Dr. Rentrop's ideas were patentable. Dr. Rentrop continued to make inquiries of Mr. Taylor regarding a financial arrangement, but Mr. Taylor did not engage Dr. Rentrop in discussions on the subject. (See PX 54; DX A1.)

23. Dr. Rentrop subsequently had discussions with other Spectranetics personnel, including Mr. Childs, about compensation for his work. Several compensation arrangements were discussed, including a possible trademark arrangement. Dr. Rentrop signed a trademark agreement in April 1999 which assigned to Spectranetics the right to use his name in connection with the .9 laser catheter. (PX 175.) Dr. Rentrop subsequently expressed reservations about the use of his name due to potential conflicts with his previous assignment of his name to USCI, and so a trademark arrangement was not pursued further. (PX 62.) Several consulting agreements

were also discussed, including (1) a three-year consulting arrangement whereby Dr. Rentrop would be paid $2,000 per day, for up to five days per year (PX 62); (2) a $30,000 flat fee (Trial Tr. 111); and (3) a 2% royalty from all sales up to a maximum of $50,000 in royalty fees (DX N1). The parties never came to a financial agreement, and Dr. Rentrop felt that Spectranetics' personnel were becoming hostile in response to his compensation inquiries. Dr. Rentrop was therefore never compensated for his role in developing the .9 laser catheter aside from the $2,000 payment to perform the animal study in California.

24. The only contractual agreement that Dr. Rentrop ever reached with Spectranetics was a confidentiality agreement. Under that agreement, Spectranetics and Dr. Rentrop mutually agreed to maintain the confidentiality of any nonpublic information disclosed between them. (PX 37.) Dr. Rentrop signed the confidentiality agreement on January 21, 1999; Spectranetics had previously signed the agreement on October 27, 1998. The agreement applied to information disclosed during the term of the agreement, and required that "[a]ll written or printed Confidential Information disclosed by either party to the other shall bear the legend 'CONFIDENTIAL' in bold-faced type on the first or cover page thereof." (PX 37.)

25. Spectranetics never proposed an employment agreement of any kind to Dr. Rentrop. Spectranetics does require its employees to enter into employment agreements whereby any inventions by the employee are assigned to Spectranetics. (See, e.g., DX O2.) Spectranetics' employment agreements, such as the one executed Mr. Taylor, also contain other provisions, such as limitations on employees' rights to engage in outside work and post-termination obligations. (Id.)

26. Dr. Rentrop did not otherwise agree to license or assign any of his inventions to Spectranetics.

27. Because the parties were unable to come to a suitable financial agreement, Dr. Rentrop determined to seek patent protection for the invention of the .9 laser catheter. Dr. Rentrop testified:

> [M]y state of mind at the time was that what was proposed [financially] was not acceptable, and that threatening [by Spectranetics' employees] to make me go away was actually quite hostile. And I have to say I was shocked about this turn of events having worked for several, 20 months, on this catheter. Spent significant time. I'm a very busy physician. These assessments [of drawings and prototypes] did take a good chunk of my time. And I had to make . . . time. And, at times, it became burdensome. I had made the effort and I found this turn of attitude towards me unbelievable.

(Trial Tr. 121.)

28. On January 4, 2000, Dr. Rentrop filed U.S. Patent Application No. 09/477,630 (the "'630 Application"), which matured into the '125 Patent. On May 15, 2002, he filed U.S. Patent Application No. 10/150,126 (the "'126 Application"), which matured into the '064 Patent. The '126 Application was a continuation of, and claims priority to, the earlier filed '630 Application. Both patents claim inventions of excimer laser catheters with small tip diameters. The '125 Patent claims an excimer laser catheter with a tip diameter that is "at most .9 mm," and the '064 Patent claims an excimer laser catheter with a tip diameter that is "less than 1 [mm]."

29. On December 30, 1999, Dr. Rentrop executed a Declaration for Patent Application, stating that he "believe[s] I am the original, first, and sole inventor" of the invention claimed in the '630 Application, which became the '125 Patent. This declaration was also used in the '126 Application, which became the '064 Patent. Dr. Rentrop did not name or otherwise suggest to the USPTO that Messrs. Taylor and/or Harlan were inventors or joint inventors of the '064 or '125 Patents. The jury found at trial that Spectranetics failed to prove by clear and

convincing evidence that Messrs. Taylor and/or Harlan were inventors or joint inventors of the '064 or '125 Patents.

30. The facts support the jury's conclusion. The evidence at trial showed that Mr. Harlan's role was that of a technician who received instructions from others to build prototypes. He did not receive instructions directly from Dr. Rentrop, but rather he received his instructions from Mr. Taylor, his boss at the time. Mr. Taylor received instructions on development from Dr. Rentrop. Mr. Taylor's efforts to describe the instructions he received from Dr. Rentrop as "ordinary customer feedback" were not credible. Dr. Rentrop's testimony established that Dr. Rentrop understood the difference between contributing customer feedback and invention. He testified to having provided clinical feedback to Spectranetics in connection with some of their other products, including their Prima Laser Wire Systems, and this testimony was corroborated by Mr. Taylor; Dr. Rentrop has not claimed to have invented those products.

31. The '630 Application and the '126 Application disclose the existence of many prior art references. The '126 Application contains a list of over 50 U.S. patents to be considered by the examiner. The prosecution history contains a memorandum from Dr. Rentrop's patent attorney describing the prior art search, and lists several patents disclosing laser catheters with diameters that range from .1 mm to 5.0 mm. The memorandum goes on to specifically describe the five prior art patents with tip diameters smaller than 1 mm, and explains the differences between the claimed invention and the prior art.

32. The prosecution history shows that Dr. Rentrop disclosed Spectranetics' Extreme catheter line to the patent examiner. The specification recites in the "Discussion of Related Art" that "[e]xcimer catheters for endovascular therapy are presently produced by the Spectranetics Corporation in the United States. Presently approved laser catheters in the United States for

endovascular therapy range in diameter from 1.4 mm to 2.2 mm." (PX 1.) This statement is also contained in Dr. Rentrop's patent applications under the heading "Discussion of Related Art." (See DX B; DX E.) The discussion of related art in the specification and the applications describes the shortcomings of the existing products, including that they were insufficiently flexible at the tip and carried high risks of dissections in coronary arteries.

33. Dr. Rentrop's German patent application for a perforation catheter is cited as a reference in the '064 Patent. Dr. Rentrop did not disclose this prior art reference to the USPTO; it was independently discovered by the patent examiner. Dr. Rentrop credibly testified that he intended to disclose it to the patent examiner as soon as he was able to locate the application, but that the patent examiner found the reference first.

34. Dr. Rentrop did not disclose USCI's Rentrop Infusion Catheter to the USPTO. Dr. Rentrop testified that he did not disclose USCI's Rentrop Infusion Catheter because it was not a laser catheter, and so Dr. Rentrop did not think it was material to the determination of patentability.

35. Dr. Rentrop did not disclose to the USPTO all of Spectranetics' existing patents and products of which he was aware that utilized excimer laser technology. Dr. Rentrop did not disclose two patents, U.S. Patent Nos. 5,514,128 (the "'128 Patent") and 5,643,251 (the "'251 Patent") that were jointly invented by Mr. Taylor and Cecily Hillsman, Daniel J. Kazprzyk and Matthew S. Solar, and which were issued in 1996 and 1997, respectively. Dr. Rentrop also did not disclose the Spectranetics' products embodying those patents known as the Prima Laser Wire Systems.

36. The '128 and '251 Patents have the identical specification. Both patents claim an invention featuring two primary components: a fiber-optic guidewire that delivers laser energy

(the "laser wire" component of the Prima Laser Wire System), and a support catheter which does not contain fiber-optics. (See DX T2, U2; Trial Tr. 564.) These patents therefore do not claim excimer laser catheters, but rather a support catheter containing a lumen through which a laser wire may be advanced. The Prima Laser Wire System reflects these features. I do not credit Mr. Taylor's testimony that the laser wire, on its own without the support catheter, is itself a "laser catheter." In these products and patents, the laser wire, which has a diameter of approximately .5 mm, is designed to be flexible so as to negotiate arterial bends to reach occlusions. These products have not been approved by the FDA.

37. Dr. Rentrop knew of the Prima Laser Wire Systems when he applied for his patent. Dr. Rentrop had given clinical feedback to Spectranetics in their development of the device. Dr. Rentrop did not disclose the Prima Laser Wire Systems or the related patents to the patent examiner because those patents and products were not laser catheters and so he did not think they were material.

38. Dr. Rentrop did not disclose to the patent examiner other laser catheters developed by manufacturers other than Spectranetics. A corporation called AIS marketed a laser catheter called the "1.3z mm," which was an excimer laser catheter with a tip diameter of 1.3 mm. A corporation called Eclipse Surgical Technologies, Inc. ("Eclipse") manufactured the "1.2 mm Laserprime Eclipse Laser Catheter," which was a holmium laser (as opposed to an excimer laser) catheter with a tip diameter of 1.2 mm. Neither reference was disclosed to the patent examiner; however, Spectranetics did not elicit testimony from Dr. Rentrop that he was aware of these products at any time while prosecuting his patents. In his testimony, Dr. Rentrop commented extensively on his work with the 1.4 mm catheter, but did not evince any awareness of the 1.2 mm or 1.3 mm laser catheters.

39. Dr. Rentrop did not disclose to the patent examiner that Mr. Taylor had provided him with an initial set of engineering drawings of Dr. Rentrop's idea for a small diameter laser catheter on April 17, 1998. (PX 25.) Similar drawings with different dimensions were submitted to the USPTO and eventually became Figure 2 of the '064 Patent. (See DX E at 54; DX H3 (side-by-side comparison of Figure 2 and the drawing prepared by Mr. Taylor).) Dr. Rentrop testified that the drawing by Mr. Taylor, without the dimensions, was a generic drawing of an excimer laser catheter together with the customary components, and so he did not believe it was material information to disclose that he had received similar drawings from Mr. Taylor.

40. Dr. Rentrop did not disclose that he received information regarding fluence levels from Spectranetics to the patent examiner. Claim 2 of the'064 Patent claims an excimer laser catheter as in claim 1 that is configured to deliver laser energy at "an energy level that is in excess of a fluence of 60 mJ/mm^2 at 40 Hertz." A laser catheter must be capable of delivering a sufficient level of laser energy in order to ablate occlusions. It is generally known to physicians who use excimer laser technology that ablation creates gas bubbles and that higher energy levels and larger diameter catheters create relatively more and more rapid gas bubble formation, which heightens the risk of dissection. In order to successfully use the technology, one must know what minimum fluence level is required to ablate occlusions, and what level is safe for the patient. The '064 Patent specification states that "[t]he use of high laser energy of more than a fluence of 60 mJ/mm^2 and more than 40 Hertz has the specific goal of effectively treating heavily calcified lesions while the small tip dimension allows the high laser energy to be delivered without excessive [g]as bubble formation. Lower laser energy levels may be used such as a fluence of 60 mJ/mm^2 at 40 Hertz to ablate holes through non-calcified tissue." The specification continues that "[a] pilot hole was drilled through calcified tissue rapidly by emitting

2660 pulses of laser energy at a fluence of 100 mJ/mm^2/80Hertz so the fastest and best results for ablating calcified tissue was for at least a fluence of 80 mJ/mm^2/80 Hertz excimer laser parameter settings." (PX 1, col. 3–4.) In other words, a fluence of 80 mJ/mm^2 at 80 Hertz is sufficient to ablate chronic total occlusions. Dr. Rentrop acknowledged on cross-examination that this observation was based on a study performed by Mr. Harlan which involved testing laser catheters and ablation rates on porcine aortic tissue and chicken bone. This information was disclosed to Dr. Rentrop in a series of letters from Spectranetics. The first was from Mr. Taylor (DX X), and the second was from Mr. Harlan (DX Y). The letters were sent before either Dr. Rentrop or Spectranetics had signed a confidentiality agreement, and the letters were not marked "CONFIDENTIAL" when they were sent. Dr. Rentrop did not disclose to the patent examiner that the observation in the specification came from Mr. Harlan's study. Dr. Rentrop did not explain why this information was not disclosed to the patent examiner.

41. The jury found that Spectranetics failed to show that Dr. Rentrop converted its property, misappropriated its trade secrets or breached a confidentiality agreement in making his submissions to the USPTO.

42. On January 6, 2004, the '064 Patent was issued over the known prior art.

CONCLUSIONS OF LAW

I. Inequitable Conduct

43. Spectranetics alleges that Dr. Rentrop committed inequitable conduct when prosecuting his patent application and that the '064 Patent is therefore unenforceable. A patent applicant has a continuing duty to prosecute their patent before the USPTO with candor, good faith and honesty. Honeywell Int'l Inc. v. Universal Avionics Systems Corp., 488 F.3d 982, 999 (Fed. Cir. 2007); see 37 C.F.R. § 1.56. A breach of this duty, coupled with intent to deceive,

constitutes inequitable conduct. Id. "The inequitable conduct analysis is performed in two steps comprising first, a determination of whether the withheld reference meets a threshold level of materiality and intent to mislead, and second, a weighing of the materiality and intent in light of all the circumstances to determine whether the applicant's conduct is so culpable that the patent should be held unenforceable." Ferring B.V. v. Barr Laboratories, Inc., 437 F.3d 1181, 1186 (Fed. Cir. 2006) (internal quotation marks omitted). Materiality and intent must be established by clear and convincing evidence. Impax Laboratories, Inc. v. Aventis Pharms. Inc., 468 F.3d 1366, 1374 (Fed. Cir. 2006).

44. The materiality of misrepresentations and omissions is judged by reference to either the "reasonable examiner" standard or the present version of the USPTO's Rule 56, codified at 37 C.F.R. § 1.56(b). Impax Laboratories, 468 F.3d at 1374. The reasonable examiner standard looks to whether "a reasonable examiner would have considered such prior art important in deciding whether to allow the pa[t]ent application." Digital Control, Inc. v. Charles Machine Works, 437 F.3d 1309, 1314 (Fed. Cir. 2006) (internal quotation marks omitted). Under the reasonable examiner standard, "material prior art need not even be invalidating prior art." Agfa Corp. v. Creo Prods. Inc., 451 F3d 1366, 1373 (Fed. Cir. 2006). Rule 56 provides an arguably narrower definition of materiality; it states:

> [I]nformation is material to patentability when it is not cumulative to information already of record or being made of record in the application, and
>
> (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or
>
> (2) It refutes, or is inconsistent with, a position the applicant takes in:
>
> (i) Opposing an argument of unpatentability relied on by the Office, or
>
> (ii) Asserting an argument of patentability.

> A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

See Digital Control, 437 F.3d at 1314 (quoting 37 C.F.R. § 1.56(b)). Rule 56 does not supplant the "reasonable examiner" test for materiality, but rather provides an alternative standard. Id. at 1316.

45. The intent element of inequitable conduct is "'in the main proven by inferences drawn from facts, with the collection of inferences permitting a confident judgment that deceit has occurred.'" McKesson Information Solutions, Inc. v. Bridge Medical, Inc., 487 F.3d 897, 913 (Fed. Cir. 2007) (quoting Akron Polymer Container Corp. v. Exxel Container, Inc., 148 F.3d 1380, 1384 (Fed. Cir. 1998)). "However, inequitable conduct requires not intent to withhold, but rather intent to deceive. Intent to deceive cannot be inferred simply from the decision to withhold [information] where the reasons given for the withholding are plausible." Id. (quoting Dayco Prods., Inc. v. Total Containment, Inc., 329 F.3d 1358, 1367 (Fed. Cir. 2003)). "[W]here withheld information is material and the patentee knew or should have know of that materiality, he or she can expect to have great difficulty in establishing subjective good faith sufficient to overcome an inference of intent to mislead." Bristol-Myers Squibb Co. v. Rhone-Poulenc Rorer, Inc., 326 F.3d 1226, 1239 (Fed. Cir. 2003).

46. Once the factual predicates of both intent and materiality are established by clear and convincing evidence, the Court must then "determine whether the questioned conduct amounts to inequitable conduct by balancing the levels of materiality and intent, with a greater showing of one factor allowing a lesser showing of the other." McKesson, 487 F.3d at 913. Therefore, a greater degree of materiality requires a lesser degree of intent to support a finding of

inequitable conduct, and vice versa. The balancing of the elements is a matter calling for the "sound exercise of equitable discretion" by the district court. Akron Polymer, 148 F.3d at 1383. A finding of inequitable conduct in connection with any claim will render the entire patent unenforceable. Baxter Int'l v. McGaw, Inc., 149 F.3d 1321, 1332 (Fed. Cir. 1998).

Spectranetics' Extreme Laser Catheters

47. Spectranetics alleges that Dr. Rentrop's disclosure of the Extreme laser catheters, and in particular the disclosure of the Extreme laser catheter with a tip diameter of 1.4 mm, was presented to the patent examiner in a materially incomplete and misleading manner. In prosecuting both the '125 and '064 Patents, Dr. Rentrop submitted under the heading "Discussion of Related Art" the following information: "Excimer laser catheters for endovascular therapy are presently produced by the Spectranetics Corporation in the United States. Presently approved laser catheters in the United States for endovascular therapy range in diameter from 1.4 mm to 2.2 mm." (DX B; DX E.) The discussion of related art continues with a description of the shortcomings of the existing products, including that they are not sufficiently flexible at the tip and carry high risks of dissections in coronary arteries. This disclosure of the prior art was not materially misleading or incomplete when measured under the reasonable examiner standard. Dr. Rentrop disclosed these prior art catheters and precisely explained what deficiencies in those products his claimed invention sought to address.

48. The evidence also does not support an inference of intent to mislead or deceive the patent examiner in the disclosure of the Extreme laser catheters. Therefore, Spectranetics cannot meet its burden to show inequitable conduct in the disclosure of the Extreme laser catheters.

Rentrop Infusion Catheter and German Patent Application

49. Spectranetics alleges inequitable conduct in Dr. Rentrop's failure to disclose either USCI's Rentrop Infusion Catheter or his German patent application. The German patent application was discovered by the USPTO and cited as a foreign patent reference in the specification of the '064 Patent. In light of the citation by the patent examiner, I conclude that the German patent application was material under the "reasonable examiner" standard, since a reasonable examiner would (and apparently did) consider that prior art important in deciding patentability. However, the materiality of this reference is low. It is not material when measured against the more stringent standards of the USPTO's Rule 56; I also note that the examiner was aware of the reference and allowed the patent, which further indicates a low degree of materiality.

50. The USCI catheter is similar in its material design features to the invention claimed in the German patent application, except that it is an infusion catheter and not a perforation catheter. In light of its similarity to the German patent application, I conclude that it is material under the reasonable examiner standard but not under the Rule 56 standard, and that therefore the materiality of the reference is low. See Digital Control, 437 F.3d at 1316.

51. Spectranetics has failed to show that Dr. Rentrop intended to deceive the USPTO by these two omissions. Dr. Rentrop testified that he intended to disclose the German patent application to the examiner as soon as he located the reference. I find this testimony by Dr. Rentrop credible. I also credit Dr. Rentrop's testimony that he did not disclose the Rentrop Infusion Catheter because he thought it irrelevant since it was not a laser catheter. The Rentrop Infusion Catheter is designed to deliver clot-busting chemicals to occlusions, which is an entirely different method of treating heart disease. While Dr. Rentrop knew that the tip of the Rentrop

Infusion Catheter was more flexible than the shaft, other art disclosed to the USPTO featured this same element. In addition, the Rentrop Infusion Catheter, like the invention claimed in the German patent application, did not feature a step-down in diameter, but rather featured a gradual taper over the length of the device. Under the circumstances, I conclude that Dr. Rentrop's belief was reasonable and plausible, and that he did not intend to deceive the patent examiner.

52. As Spectranetics has failed to meet its burden to show an intent to deceive by failing to disclose the Rentrop Infusion Catheter or the German patent application, there is no need to engage in the balancing of materiality and intent. I note that even if a weak inference of intent could be supported by these facts, the materiality of this omission is so low that inequitable conduct would not be found.

'128 and '251 Patents and Prima Laser Wire Systems

53. Dr. Rentrop did not disclose the '128 or '251 Patents or the Prima Laser Wire Systems embodying those patents to the patent examiner. Viewed under either the reasonable examiner standard or Rule 56, these patents and products were not material. A reasonable examiner would not view these as important references in deciding whether to allow the patent. At trial, Spectranetics emphasized that the laser wire was .5 mm; however, the laser wire is not a catheter, and Dr. Rentrop did disclose to the patent office several prior art laser catheters that were less than 1 mm, including one that was approximately .5 mm. The Prima Laser Wire products and patents were therefore cumulative and not material in light of the prior art that was disclosed.

54. Spectranetics has also failed to show by clear and convincing evidence that these omissions by Dr. Rentrop were intended to deceive the patent examiner. Although Dr. Rentrop knew of the existence of these items, Dr. Rentrop's testimony that he did not disclose the items

because they were not laser catheters is highly plausible, particularly in light of the other disclosed prior art.

55. As Spectranetics has failed to meet its burden to show intent to deceive with respect to the ’128 Patent, the ’251 Patent or the Prima Laser Wire Systems, there is no need to engage in the balancing of materiality and intent. I note that even if the facts could support weak inferences of materiality and intent, the elements would nevertheless be sufficiently low that a finding of inequitable conduct would not result.

AIS’s 1.3z mm Catheter and Eclipse’s 1.2 mm Laserprime Eclipse Laser Catheters

56. Dr. Rentrop did not disclose the existence of the 1.3z mm excimer laser catheter by AIS or the 1.2 mm holmium laser catheter by Eclipse. These catheters, representing smaller diameter laser catheters than those made by Spectranetics in the Extreme catheter line, were material prior art measured against the reasonable examiner standard. However, Spectranetics failed to elicit any testimony from Dr. Rentrop establishing that Dr. Rentrop knew of this prior art when he filed his patent applications in connection with the ’064 Patent or at any time during the prosecution of the patents. Dr. Rentrop’s extensive testimony regarding the 1.4 mm Extreme catheter and his dissatisfaction with its size suggests that he was not familiar with these smaller diameter catheters. Correspondingly, there is no evidence that Dr. Rentrop intended to deceive the patent examiner by failing to disclose these devices, and so inequitable conduct is not established.

Engineering Drawings from Mr. Taylor of the Proposed Small Diameter Catheter

57. Dr. Rentrop submitted drawings to the patent examiner that were similar to those initially provided to him by Mr. Taylor embodying Dr. Rentrop’s idea for a small diameter laser catheter. (See PX 25.) Dr. Rentrop did not disclose to the patent examiner that he had received

such drawings. However, the drawing Dr. Rentrop provided to the patent office excised the dimensions and descriptive material included by Mr. Taylor, leaving only a generic drawing of an excimer laser catheter together with its usual components. The fact that Dr. Rentrop had received a similar drawing to the one he submitted to the patent office from Mr. Taylor was not material, measured against either the reasonable examiner standard or the Rule 56 standard.

58. Spectranetics has also failed to demonstrate that Dr. Rentrop intended to deceive the patent office by failing to disclose that he received the drawings from Mr. Taylor. I credit Dr. Rentrop's testimony that he viewed the drawings as generic renditions of any excimer laser catheter that did not warrant disclosure to the patent office. This explanation is reasonable and plausible, and so the requisite intent is not present.

59. As Spectranetics has failed to meet its burden to show intent to deceive with respect to the drawing provided to him in PX 25, there is no need to engage in the balancing of materiality and intent. I note also that the material provided to Dr. Rentrop was transmitted prior to the execution of a confidentiality agreement, and was not marked "CONFIDENTIAL." The jury concluded that Dr. Rentrop did not breach his confidentiality agreement, misappropriate trade secrets or convert Spectranetics' property with respect to this drawing.

References to Mr. Harlan's Experiments without Attribution

60. The specification of the '064 Patent makes reference to a study of ablation through calcified tissue by stating: "A pilot hole was drilled through calcified tissue rapidly by emitting 2660 pulses of laser energy at a fluence of 100 mJ/mm^2/80Hertz so the fastest and best results for ablating calcified tissue was for at least a fluence of 80 mJ/mm^2/80 Hertz excimer laser parameter settings." (PX 1, col. 3–4.) Dr. Rentrop stated on cross-examination that the observation contained in this quotation was conveyed to him by Spectranetics, and was based on

tests performed by Mr. Harlan involving porcine aortic tissue and chicken bone. The information was not marked confidential, and was conveyed prior to the execution of a confidentiality agreement. The jury concluded that the use of this information did not breach the confidentiality agreement, and was not a misappropriation of trade secrets or a conversion of Spectranetics' property. However, I conclude that the fact that this information was derived from Mr. Harlan's study is material; while it does not establish a prima facie case of invalidity or joint inventorship, a reasonable examiner would want to know that the study was performed by an individual other than Dr. Rentrop, working on behalf of Spectranetics, with whom Dr. Rentrop worked to develop a prototype of the claimed invention. While material, this information is not highly material, since there is no basis on which to conclude that knowledge that Mr. Harlan performed the study would have ultimately affected the patentability determination.

61. The omission or misrepresentation regarding the ablation-rate study does support a weak inference of intent to deceive the patent examiner with respect to the referenced study. By failing to disclose that Spectranetics' development personnel conducted the study, and presenting the information in a manner suggestive that Dr. Rentrop personally conducted or oversaw the study, one can infer that Dr. Rentrop intended to hide the collaborative aspects of the development of the .9 laser catheter. Dr. Rentrop failed to articulate a plausible reason for this omission that would counter that inference.

62. Nevertheless, having balanced the materiality and the intent elements, I conclude that Dr. Rentrop did not engage in inequitable conduct with respect to these studies. The materiality is low, and the inference of intent is not sufficiently strong to support a finding of inequitable conduct.

63. Therefore, Spectranetics has failed to meet its burden to show inequitable conduct, and the '064 Patent is enforceable by Dr. Rentrop.

II. Implied-in-Law License

64. Spectranetics claims that it owns an implied-in-law license in the form of a "shop right" to use the invention claimed in the '064 Patent without liability for infringement. See McElmurry v. Arkansas Power & Light Co., 995 F.2d 1576, 1580 (Fed. Cir. 1993). While shop rights have been characterized by some courts in some cases as an implied license, other cases describe shop rights as a species of equitable estoppel. Id. at 1580-81. The Federal Circuit has noted that despite these competing theoretical bases for shop rights, the analysis is often the same irrespective of the theory because "the underlying analysis in each case is driven by principles of equity and fairness . . . ." Id. at 1581. Consistent with the Federal Circuit's emphasis on equity and fairness, the Circuit has embraced a "totality of the circumstances" approach to analyzing shop rights:

> the proper methodology for determining whether an employer has acquired a 'shop right' in a patented invention is to look to the totality of the circumstances on a case by case basis and determine whether the facts of a particular case demand, under principles of equity and fairness, a finding that a 'shop right' exists. In such an analysis, one should look to such factors as the circumstances surrounding the development of the patented invention and the inventor's activities respecting that invention, once developed, to determine whether equity and fairness demand that the employer be allowed to use that invention in his business.

Id. at 1581-82. While most cases addressing shop rights concern the employer/employee relationship, the existence of an employment relationship is not a strict prerequisite to finding a shop right. Id. at 1583 n.15. "Because broad equitable principles are involved in determining whether shop rights in an invention arise, '[t]he full nature of the parties' relationship must be

examined to determine whether a shop right exists.'" Id. at 1582 (quoting Rosenberg, Patent Law Fundamentals, § 11.04, 11-20 (1991)).

65. The Federal Circuit has endorsed the consideration of the following factors for analyzing claims to shop rights:

> the contractual nature of the relationship between employer and employee, whether the employee consented to the employer's use of the invention, and whether the employee induced, acquiesced in, or assisted the employer in the use of the invention. . . .
>
> An employer will have shop rights in an invention in situations where the employer has financed an employee's invention by providing wages, materials, tools and a work place. Other factors creating shop rights include an employee's consent, acquiescence, inducement, or assistance to the employer in using the invention without demanding compensation.

McElmurry, 995 F.2d at 1582; see also United States v. Dubilier Condenser Corp., 289 U.S. 178, 188-89 (1933) ("Since the servant uses his master's time, facilities and materials to attain a concrete result, the latter is in equity entitled to use that which embodies his own property . . . .").

66. While shop rights are a common-law doctrine, the seminal cases elaborating on these equitable rights come from the United State Supreme Court in decisions that predate Erie Railroad Co. v. Tompkins, 304 U.S. 64 (1938). The courts of both Colorado and New York have embraced and applied that precedent. See, e.g., Scott Sys., Inc. v. Scott, 996 P.2d 775 (Colo. Ct. App. 2000); Cahill v. Regan, 5 N.Y.2d 292 (1959). The federal common law of shop rights is also generally followed by other jurisdictions. In light of this widespread acceptance by state courts of the federal common law of shop rights, the Federal Circuit has stated that its most recent explication of shop rights in McElmurry governs shop right analyses in patent cases. McElmurry, 995 F.2d at 1580 n.8.

Analysis

67. This is not a case in which equity and fairness require finding that Spectranetics possesses a shop right to use the invention claimed in the '064 Patent without liability for infringement. Looking to the first factor approved by the Federal Circuit and the Supreme Court – the contractual nature of the relationship – the parties were never able to formalize their relationship and come to financial terms in a contractual agreement. The only agreement that the parties reached and abided by was a confidentiality agreement, which was established to mutually protect both Spectranetics and Dr. Rentrop. Because the parties did not agree to financial terms, Spectranetics has not paid any wages or fees to Dr. Rentrop for his invention of .9 laser catheter, and did not compensate him for the extensive work he conducted on his own time in New York to inspect prototypes and designs and direct changes to the product. The only fee Dr. Rentrop received was compensation to perform an animal test in California, for which Dr. Rentrop received $2,000.

68. The failure to come to financial terms did not result from Dr. Rentrop's failure to impress upon Spectranetics that he viewed the .9 laser catheter as his invention for which he expected a royalty. As Mr. Taylor corroborated, Dr. Rentrop stated his interest in a royalty during their first telephone conversation. Dr. Rentrop was thereafter persistent in his expectation of remuneration, and rejected as inadequate several consulting arrangements offered by Spectranetics that would have compensated him up to $50,000.

69. Spectranetics cannot, therefore, claim an equitable license to use the fruits of Dr. Rentrop's labor and inventive efforts. While it is true that Spectranetics invested substantial sums to develop a prototype under Dr. Rentrop's instruction, and its salaried employees worked to accomplish that goal at Spectranetics' facilities in Colorado, those contributions are not alone

sufficient to establish shop rights. The totality of the circumstances based on the facts of this case support the conclusion that Spectranetics does not have a shop right in the form of an implied license to use the invention claimed in the '064 Patent. Spectranetics cannot claim to own any part of Dr. Rentrop's time, labor or inventive efforts, all of which occurred on Dr. Rentrop's own time and in New York. Dr. Rentrop has not been compensated by Spectranetics aside from $2,000 to perform an animal study in California; by contrast, Spectranetics' sales of the accused devices have brought in over $10 million dollars in revenue. Principles of equity and fairness do not weigh in Spectranetics' favor on these facts.

70. Although Spectranetics does not explicitly invoke an estoppel theory for its claimed shop right, I note that such a theory is also without support in the record. Dr. Rentrop did not induce, acquiesce or assist Spectranetics in using the .9 laser catheter in a manner that suggested his consent that Spectranetics use the .9 laser catheter without compensating Dr. Rentrop. Dr. Rentrop made it clear at all times that he expected remuneration. Furthermore, he did not delay in seeking patent protection once it was apparent to him that a suitable agreement would not be reached. Dr. Rentrop's first patent application for a .9 laser catheter was filed on January 4, 2000; the record reflects that Spectranetics proposed various consulting arrangements to Dr. Rentrop as late as August 1999 (DX N1) and November 1999 (PX 62).

71. Therefore, there is no basis on which to conclude that Spectranetics has a shop right or implied license to use Dr. Rentrop's patented invention without liability for infringement.

Conclusion

For the foregoing reasons, the Court rejects Spectranetics asserted equitable defenses. The Clerk shall enter judgment in favor of plaintiff. The post-trial motions are addressed in a Memorandum and Order filed on the date hereof.

SO ORDERED.

P. Kevin Castel
United States District Judge

Dated: New York, New York
August 22, 2007